

Deloitte Access Economics

The cost of perinatal
depression in
Australia

FINAL REPORT

Post and Antenatal
Depression Association

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Executive Summary

This study supports the endeavours of the Post and Antenatal Depression Association (PANDA) in raising awareness of the prevalence and impacts of maternal and paternal perinatal depression in Australia, and highlights some of the benefits of PANDA's services.

The key objectives of this study were to assess:

1. **Prevalence** of antenatal depression (AND) and postnatal depression (PND) among women (maternal) and men (paternal).
2. **Financial costs** associated with perinatal depression, to governments and private payers (private health insurance funds and individuals), including:
 - a Direct costs related to expenditure on health care services for people with perinatal depression; and
 - b Indirect costs, including those related to productivity losses and the costs of informal care (e.g. if a partner or other family member must stay at home to care for the person with perinatal depression).
3. **Burden of disease** associated with perinatal depression, measured in terms of lost quality of life among people with perinatal depression.
4. **Potential benefits associated with the PANDA National Perinatal Depression Helpline**, which provides support, counselling, information and referral services for people with perinatal depression.

Perinatal Depression

Perinatal depression is a mood disorder which encompasses antenatal depression (AND), arising during pregnancy, and postnatal depression (PND), experienced for varying durations over the first 12 months following childbirth (Brenda and Kaplan 2009; Gavin et al. 2005). People with AND may go on to experience PND. Similarly, people with PND may not necessarily have also experienced AND during their pregnancy.

Symptomatology of perinatal depression is similar to that for depression generally. Symptoms may be experienced by both the mother (maternal AND/PND) and her partner (paternal AND/PND). People with both AND and PND may experience a lower than normal mood, loss of enjoyment of life, feelings of hopelessness, anxiety¹, excessive fatigue, tearfulness, psychomotor agitation, appetite and sleep disturbance, guilt and/or feelings of inadequacy (O'Hara and Swain 1996).

There is little agreement in the literature regarding the duration of perinatal depression; however it has been suggested that most cases remit within three to six months, with some cases lasting up to four years (Campbell and Cohn 1997; Goodman 2004; Horowitz and Goodman 2004; McLennan et al. 2001).

¹ Anxiety may be a feature of both AND and PND, however it may also be considered a separate diagnostic category. It should be noted that diagnostic classification systems (DSM-IV and ICD-10) do not distinguish between depression and anxiety in the perinatal period.

Depression is the leading cause of non-fatal disability in Australia, representing a significant disease burden. The range of depressive disorders, which include perinatal depression, are associated with substantial losses to the economy in terms of lost worker productivity and, high utilisation of health and social services which impact the government directly. Depression has consistently been the most frequent of mental health conditions managed by General Practitioners (GPs) in Australia over recent years – along with anxiety and sleep disturbance (also symptoms of depression), accounting for over 60% in 2009-10 (AIHW 2011).

In response, the Australian, state and territory governments committed to the National Perinatal Depression Initiative 2008-2013, which included contributions to the national rollout of universal screening for maternal perinatal depression. This also provided funding to raise community awareness and provide training to health professionals. Other programs improve access to specialised mental health services provided by psychologists and other allied health professionals, including *Access to Allied Psychological Services* (ATAPS, through Divisions of General Practice), *Better Access* and *Mental Health Treatment Plans* (through Medicare). (DOHA 2012b).

Perinatal depression is a global issue, however, risk factors and causes of perinatal depression and anxiety vary between countries and cultures, and between ethnic groups within countries (Affonso et al. 2000). In Australia, the risk factors for perinatal depression are reported to include living in a rural community, unemployment, and housing and financial difficulties (AIHW 2012a).

Prevalence

There is little agreement regarding the prevalence of perinatal depression, (maternal or paternal) within the Australian and international literature

Prevalence is commonly assessed through screening programs, which utilise tools such as the Edinburgh Depression Scale (EPDS), developed specifically to detect cases of maternal perinatal depression (but also used for paternal perinatal depression). The Beck Depression Inventory (BDI) is also commonly used to detect paternal perinatal depression in particular. and was developed to detect depression in the general population. Both scales involve a questionnaire, where responses are scored and a score above a certain cut-off indicates the potential presence of depression. This must then be confirmed with clinical diagnosis, as the rate of false positives detected in the EPDS, for example, may be 30% (Austin et al. 2010).

Depending on the point in time at which screening is undertaken, the scale used and characteristics of the sample population, prevalence estimates vary widely. A targeted literature search was conducted and identified the following prevalence ranges in the Australian population:

- **Maternal AND** – 12% to 22% (Matthey et al. 2000; Morse et al. 2000);
- **Maternal PND** – 6.1% at four to six weeks after childbirth to 22% at one month after childbirth (Condon and Corkindale 1997; Morse et al. 2000);
- **Paternal AND** – 5.2% to 12.0% (Condon et al. 2004; Morse et al. 2000); and
- **Paternal PND** – 2.9% to 17.4% (Matthey et al. 2001; Dudley et al. 2001).

Prevalence estimates were based on studies that fulfilled a number of criteria, Australian studies based on a large sample size were preferred, and it was a requirement that the method used to detect perinatal depression was in line with best practice, as identified in the literature. The selected prevalence rates and estimated numbers of people with perinatal depression in Australia in 2012 are summarised in Table i.

Table i: Australian perinatal depression prevalence, 2012

| Illness | Prevalence (%) | New mothers/ fathers | Prevalence (n) |
|--------------|----------------|----------------------|----------------|
| Maternal AND | 8.9% | 289,335 | 25,751 |
| Maternal PND | 15.7% | 289,335 | 45,426 |
| Paternal AND | 5.3% | 280,655 | 14,875 |
| Paternal PND | 3.6% | 280,655 | 10,104 |

Source: Buist and Bilszta 2006; Matthey et al. 2000 and ABS 2010.

Note: The literature presents a wide range of estimates of prevalence rates, commonly taken from screening samples, which are subject to false positive and false negative results. The estimates presented in this table reflect the criteria outlined in section 2.2.

The total number of people with perinatal depression in 2012 was estimated to be 96,156, including 71,177 new mothers and 24,979 new fathers.

It is estimated that, in Australia, around 26,000 women will experience AND and 45,000 women will experience PND in 2012. Fewer data are available on the extent of paternal perinatal depression. This study proposes best estimates of 15,000 men experiencing AND and 10,000 men experiencing PND.

This is in line with the Australian and international literature regarding the costs of depression more broadly and reflects the similar symptomatology of perinatal depression and depressive disorders that arise outside of the perinatal period (see, for example, Hilton et al. 2003).

Direct financial costs – health services

Table ii summarises the total direct costs estimated to be associated with maternal and paternal perinatal depression in 2012. These costs relate to primary care, psychiatrist and allied health services, medications, hospitals and community services.

Where it was necessary to make assumptions in order to calculate costs for both public and private expenditure, these always resulted in conservative cost estimates. Costs were estimated for maternal and paternal PND only, as no reliable data was available relating to AND. The costs of screening for perinatal depression have also been excluded.

Total costs to government for attributable to maternal and paternal PND were estimated at \$40.52 million in 2012. Private costs were estimated at \$38.13 million, including \$22.69 million to private health insurance funds and \$15.44 million to individuals.

Total costs for maternal and paternal PND (governments and private) were estimated at \$78.66 million.

The highest cost category across all payers and in total was hospital services, which were estimated to be \$42.84 million in 2012. This is notable, given that the NHMRC-approved

Clinical Practice Guidelines for depression and related disorders in the perinatal period (Austin et al. 2011) indicate that the majority of care should be provided in a primary care setting. The next most significant cost categories were psychiatrist and allied health services (\$13.91 million), medications (\$10.78 million), primary care (\$7.41 million) and community mental health services (\$3.72 million). Total estimated costs by payer are shown in Table ii.

Table ii : Summary of direct costs of PND* in Australia (\$ million)

| Cost category | Maternal PND | | | | Paternal PND** | | | | Total PND | | | |
|---------------------------------------|--------------|--------------|--------------|--------------|----------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|
| | Govt | PHI | Ind | Tot | Govt | PHI | Ind | Tot | Govt | PHI | Ind | Tot |
| Primary care | 5.04 | n/a | 0.50 | 5.54 | 1.53 | 0.25 | 0.10 | 1.87 | 6.57 | 0.25 | 0.60 | 7.41 |
| Psychiatrist & allied health services | 4.70 | 0.69 | 2.14 | 7.53 | 3.84 | 0.90 | 1.63 | 6.38 | 8.54 | 1.59 | 3.77 | 13.91 |
| Medications | 1.79 | 1.79 | 1.68 | 3.48 | 3.79 | 0.04 | 3.48 | 7.31 | 5.58 | 1.83 | 5.17 | 10.78 |
| Hospitals*** | 14.42 | 20.33 | 5.67 | 40.42 | 1.77 | 0.48 | 0.16 | 2.42 | 16.20 | 20.82 | 5.83 | 42.84 |
| Community services | 3.64 | n/a | 0.07 | 3.72 | n/a | n/a | n/a | n/a | 3.64 | n/a | 0.07 | 3.72 |
| Total | 29.60 | 21.02 | 10.07 | 60.68 | 10.93 | 1.67 | 5.37 | 17.97 | 40.52 | 22.69 | 15.44 | 78.66 |

Notes:

*No costs were estimated for AND, due to data limitations.

**Cost estimates for paternal PND are indicative only, due to data limitations.

***Hospital costs reflect inpatient costs only for maternal PND and outpatient costs only for paternal PND.

PND=Postnatal Depression; Govt=governments; PHI=private health insurance; Ind=Individuals; Tot=Total.

All cost estimates are subject to the caveats outlined in sections 3.1.2.6, 3.1.3.6 and 3.2.3.

Costs for maternal PND were estimated from data provided by the AIHW where PND was indicated as the primary diagnosis for the case. This diagnosis category is relatively narrow and includes only depression arising within six weeks of childbirth (in line with the ICD-10 classification).

Paternal PND is also not included in this category. Paternal PND costs were estimated from a study of the “excess” health care costs associated with depression in the general population (Hawthorne et al. 2003). Costs of treating paternal PND in hospitals are not the highest cost category, as they are for maternal PND, because Hawthorne et al. did not find any significantly higher hospital inpatient costs for people with depression (only hospital outpatient costs, which are less than inpatient costs, are included).

These estimates are likely to understate the true direct health service costs of both maternal and paternal perinatal depression, due to the conservative approach that was taken in making assumptions. One major limitation is that no costs for maternal or paternal AND were included. Furthermore, the estimates for maternal PND were limited to where PND was directly identified as the reason for treatment. This excludes women diagnosed with PND more than six weeks after childbirth. It also excludes women who are not diagnosed but may seek medical treatment for related conditions, as well as potential longer term consequences that stem from the PND. Other data limitations are discussed in sections 3.1.2.6, 3.1.3.6 and 3.2.3.

Indirect costs and costs to the wider economy

Total indirect costs and costs to the wider economy were estimated at \$354.87 million, these were predominantly attributable to productivity losses (\$310.34 million).

Productivity losses

Productivity losses attributable to perinatal depression were estimated from a large Australian study conducted in 2009 (Hilton et al. 2010), based on the results of a survey of more than 60,000 full-time employees from 58 large companies. These estimates were adjusted to reflect average earnings in 2012 and reduced workforce participation among pregnant women / new mothers and fathers.

The total costs of lost productivity due to perinatal depression in 2012 were estimated to be \$310.34 million.

This includes: \$86.59 million for maternal perinatal depression (\$53.22 million AND and \$33.37 million PND); and \$223.75 million for paternal perinatal depression (\$117.41 million AND and \$106.34 million PND).

The major factor influencing the substantially higher costs attributable to paternal perinatal depression is the higher average earnings for men relative to women in Australia. Also, the majority of new mothers spend time out of the workforce during pregnancy and immediately following childbirth, whether or not they have perinatal depression, which limits the difference in productivity between people with and without perinatal depression. This is more pronounced for PND than AND, due to greater workforce participation during pregnancy than following childbirth.

Informal care

Informal carers provide care to others in need of assistance or support on an unpaid basis. Generally, informal care is provided by family or friends of the person receiving care. While the carer may not charge for the service they provide, they may have to forgo paid employment in order to fulfil their role as carer. Indeed, the value of lost leisure time would also represent a cost to the carer. However, the targeted literature search did not identify a reliable source of Australian or international data regarding carers for people with perinatal depression. As a result, the informal care costs of AND and PND for women and men were excluded from this study.

Costs to the wider economy

Additional economic costs are associated with government expenditure on health and related services that are provided to people with perinatal depression. The government raises taxes in order to fund expenditure on health services². While the direct transfer of funds from tax payers to the government is not considered an economic cost in itself, the transfer is. For example, income taxes increase the price of working, relative to leisure

² This implicitly assumes funds have not been directed from some other area of the health care system.

activities, and create a disincentive to work. This disincentive creates deadweight loss or an excess burden of tax³.

Costs to the wider economy were calculated at 28.75%⁴ of the costs to government, resulting from direct expenditure on health services for people with perinatal depression and lost taxation revenue due to lost earnings (productivity losses). This results in costs of \$44.53 million.

Burden of disease

People who experience perinatal depression may experience a considerable loss in quality of life. This is measured in non-financial terms, based on the disability adjusted life year (DALY).

Table 4.3 summarises the estimated burden of perinatal depression in Australia in 2012. Premature mortality was excluded from the analysis as the targeted literature search did not identify any conclusive evidence regarding this. The entire burden thus relates to years of life lived in disability, at a disability weight (0.51) taken from Dutch burden of disease studies to reflect moderate to severe depression. These weights were applied to assumed durations for each category of disorder, taken from the literature, and applied to prevalence estimates.

Total DALYs attributable to perinatal depression in Australia in 2012 were estimated at 20,732. This includes: 4,991 from maternal AND (24.1%); 11,584 from maternal PND (55.9%); 2,200 (10.6%) from paternal AND; and 1,958 (9.4%) from paternal PND.

Maternal PND accounts for the majority of DALYs, as a result of higher prevalence estimates and assumed longer duration. Opposite reasons lead to lower DALYs for AND (lower prevalence estimate and shorter assumed duration).

Paternal AND accounts for slightly more DALYs than paternal PND, reflecting a higher estimated prevalence.

Uncertainty regarding the prevalence and duration of perinatal depression meant that a conservative approach was taken to applying assumptions for these. As such, the calculated burden of disease (DALYs) is likely to understate the true burden.

³ The costs associated with deadweight loss will depend on the method used to raise additional taxation revenue. Studies that have evaluated the marginal welfare cost of raising additional tax revenue – the marginal cost of public funds (MCPF) – mostly relate to the United States (Browning 1976; Browning et al. 1987; Ballard et al. 1985; Stuart 1984). Estimates have ranged from zero marginal cost to well over 100%. This wide range has been due to the alternative models used (partial versus general equilibrium), alternative parameter estimates, and assumptions on the adjustment of employment relative to changes in tax rates (labour supply elasticity).

⁴ The Productivity Commission (2003) has estimated a marginal cost of 28.75 cents per dollar of additional tax revenue that is raised (27.5 cents attributable to lost efficiency and 1.25 cents attributable to administration by the Australian Taxation Office).

Table iii: DALYs due to perinatal depression in Australia in 2012

| Disease | Prevalence | Disability weight | Duration | YLD | YLL | DALY |
|--------------------------------------|------------|-------------------|----------|---------------|----------|---------------|
| Maternal AND | 25,751 | 0.51 | 0.38 | 4,991 | 0 | 4,991 |
| Maternal PND | 45,426 | 0.51 | 0.50 | 11,584 | 0 | 11,584 |
| Maternal perinatal depression | | | | 16,574 | 0 | 16,574 |
| Paternal AND | 14,875 | 0.51 | 0.29 | 2,200 | 0 | 2,200 |
| Paternal PND | 10,104 | 0.51 | 0.38 | 1,958 | 0 | 1,958 |
| Paternal perinatal depression | | | | 4,158 | 0 | 4,158 |
| All perinatal depression | | | | 20,732 | 0 | 20,732 |

Benefits of the PANDA National Perinatal Depression Helpline

Amongst other activities, PANDA operate the National Perinatal Depression Helpline (“the PANDA Helpline”), to provide support, advice and referral services for women and men with symptoms of AND and PND (and anxiety). It is estimated that approximately 2,500 women will contact the PANDA Helpline in 2012, 40% of whom are diagnosed with perinatal depression (while men represent a significant proportion of the burden of perinatal depression in Australia, data indicate that they are much less likely than women to call the PANDA Helpline).

Based on limited follow up data, up to 85% of these women will seek further support from health professionals after calling the PANDA Helpline. As a result, they may be better able to manage the disorder, potentially avoiding the use of more intensive or emergency health care services later on and assisting them in returning to or continuing to work.

Callers to the PANDA Helpline represent approximately 1-3% of the estimated 70,000 women with perinatal depression or an associated condition and only a handful of the estimated 25,000 men with perinatal depression in Australia. **Thus, there may be scope for the PANDA Helpline to reach out to more women and men with perinatal depression.**

Recommendations for PANDA Helpline

The benefits assessment indicates that an expansion of the service could benefit additional callers. This could be achieved via:

- greater promotion of PANDA and the PANDA Helpline at maternity clinics, other family services centres and through all forms of media and social media to reduce stigmas and encourage people to seek earlier treatment;
- more resources and counsellors to deal with incoming calls and follow up with callers;
- increased focus of promotion activities on men;
- greater integration of PANDA with primary care services in Australia (e.g. direct referrals); and
- enhanced data collection, including follow up of caller outcomes after treatment is sought.

Conclusions

Perinatal depression is estimated to cost the Australian economy \$433.52 million in 2012, in financial costs only (\$4,509 per person with perinatal depression). Of these total costs: \$56.98 million is attributable to maternal AND (\$2,213 per woman with AND); \$113.86 million is attributable to maternal PND (\$2,506 per woman with PND); \$125.7 million is attributable to paternal AND (\$8,451 per male with AND) and: \$136.99 million is attributable to paternal PND (\$13,558 per male with PND).

In addition to the financial costs, perinatal depression equates to a loss of 20,732 DALYs in 2012, which represents a significant disease burden. Costs are broken down in Table iv and shown in Chart i. The majority of the economic costs attributable to perinatal depression result from lost productivity in the workplace. Hence, the costs for paternal AND and PND are much higher than for maternal AND and PND, because men's earnings are, on average, greater than women's, and men are more likely to work than women due to the perinatal period in the absence of disorder. These findings are consistent with other studies of the cost of depression (e.g. Greenberg et al. 1993).

It is also important to note that no additional direct health costs were included for AND (maternal and paternal), as a result of lack of data. Other data limitations are discussed where costs are estimated throughout the report.

This study faced significant limitations in data availability and reliable research on which to base cost estimates, which is likely to mean that costs have been underestimated. More primary research on perinatal depression, its costs and its treatment in Australia could support the evidence base for effective policy decision making and investment. This research may include:

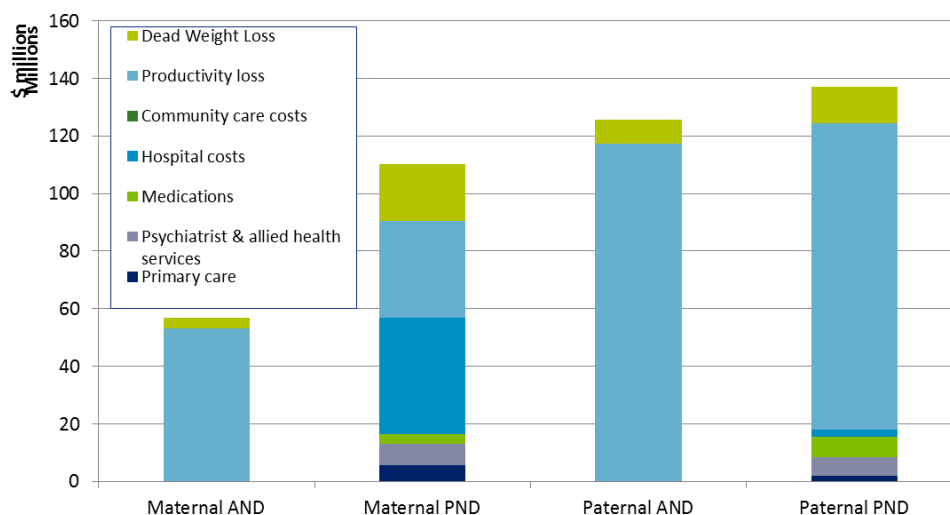
- studies of health care and other resource use by Australians with AND and PND compared with pregnant women, new mothers, and their partners, who do not suffer from depression;
- retrospective cost studies of Australians with perinatal depression to estimate the differential costs for people seeking treatment at different stages;
- randomised trials of interventions to prevent, support or treat Australians with perinatal depression, including the PANDA Helpline;
- studies of the productivity impacts and caregiver burdens for Australians with perinatal depression (rather than depression in general); and
- enhanced data collection processes for callers to the PANDA Helpline, including more detailed data capture on subsequent caller behaviour.

Table iv: Economic costs and DALYs, perinatal depression in Australia in 2012

| Cost | Maternal AND | Maternal PND | Paternal AND | Paternal PND | Total |
|---------------------------------------|---------------|---------------|---------------|---------------|---------------|
| Prevalence | 25,751 | 45,426 | 14,875 | 10,104 | 96,155 |
| Financial costs (\$ million) | | | | | |
| Primary care | n/a | 5.54 | n/a | 1.87 | 7.41 |
| Psychiatrist & allied health services | n/a | 7.53 | n/a | 6.38 | 13.91 |
| Pharmaceuticals | n/a | 3.48 | n/a | 7.31 | 10.78 |
| Hospital costs | n/a | 40.42 | n/a | 2.42 | 42.84 |
| Community care costs | n/a | 3.72 | n/a | 0.00 | 3.72 |
| Total direct costs | n/a | 60.68 | n/a | 17.97 | 78.66 |
| Productivity loss | 53.22 | 33.37 | 117.41 | 106.34 | 310.34 |
| Deadweight losses | 3.76 | 19.80 | 8.29 | 12.68 | 44.53 |
| Total financial costs | 56.98 | 113.86 | 125.70 | 136.99 | 433.52 |
| DALYs | 11,584 | 4,991 | 2,200 | 1,958 | 20,732 |

Source: Deloitte Access Economics calculations. Note: Totals may not add due to rounding.

Chart i: Total estimated economic costs of perinatal depression in Australia in 2012



Source: Deloitte Access Economics calculations.

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Limitation of our work

General use restriction

This report is prepared solely for PANDA. This report is not intended to be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of estimating the prevalence and cost of perinatal depression in Australia in 2012 and the benefits of the PANDA National Perinatal Depression Helpline.

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